FACULTY:	Department of Mechanical Engineering
FIELD OF STUDY:	Transport
ERASMUS COORDINATOR OF THE FACULTY:	Dr hab. inż. Agnieszka Kułakowska, Prof. PK
E-MAIL ADDRESS OF THE COORDINATOR:	agnieszka.kulakowska@tu.koszalin.pl
COURSE TITLE:	Technical thermodynamics and fluid mechanics II
LECTURER'S NAME:	Dr hab. inż. Malgorzata Sikora, Prof PK
E-MAIL ADDRESS OF THE LECTURER:	malgorzata.sikora@tu.koszalin.pl
COURSE CODE (USOS):	4S
ECTS POINTS FOR THE COURSE:	4 ECTS
ACADEMIC YEAR:	2024/2025
SEMESTER: (W – winter, S – summer)	S
HOURS IN SEMESTER:	30 + 30
LEVEL OF THE COURSE: (1st cycle, 2nd cycle, 3rd cycle)	1st cycle
TEACHING METHOD: (lecture, laboratory, group tutorials, seminar, other-what type?)	Lecture + laboratory
LANGUAGE OF INSTRUCTION:	• English full time scheme for classes with 5 and more international Erasmus+ students enrolled/accepted; • English 50% individually with the teacher + Polish 50% with Polish students or individual project work-scheme for classes with less than 5 international Erasmus+ students enrolled/ accepted;
ASSESSMENT METOD: (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?)	Written exam + written reports
COURSE CONTENT:	Fluid properties (*density, viscosity, surface tension, methods of measurements*); pressure and its measurements (*Pascal's law, hydrostatic pressure*); fluid kinematics (*velocity and acceleration, Lagrange and Euler methods of analysis, volumetric flow rate, mass flow rate, conservation of mass, steady-state flow, continuity equation*); fluid dynamics (*flow regimes, laminar flow, turbulent flow, flow velocity profiles, average velocity, Reynolds number, equation of motion, Bernoulli equation, energy conversions in fluid systems, application of Bernoulli's equation*); flow through pipes (*pressure drop, friction factor and its measurements, Darcy's equation*). 1. General principles of thermal metrology 2. Temperature measurements (expansion thermometer, thermocouple) 3. Temperature measurements (resistance thermometer, optical thermometer) 4. Pressure measurements 5. Measurement of humidity 6. Measurement of viscosity 7. Measurement of the local fluid velocity 8. Flow measurement - classical methods 9. Flow measurement - modern methods 10. Reynolds experiment – flow motion 11. Linear pressure losses in pipelines 12. Local pressure losses in pipelines 13. The characteristics of a fan 14. The characteristics of a pump

	15. Final assessment
ADDITIONAL INFORMATION:	

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